

From July 6 to 14 the Smoky Hill River and subsidiary creeks overflowed their banks from Salina to Junction City, Kans., the highest water occurring on the 10th. East Salina was overflowed, and about sixty per cent of the growing crops on the bottom land between that place and Junction City were greatly damaged. From east of Junction City to Topeka there was no damage of consequence.

When the volume of water from the overflowed land west of Junction City came on, it had but little effect on the eastern end of the river; in fact it did not wholly check the falling tendency at Topeka.

From July 6 to 12 the Republican River overflowed its banks at Clay Center, the maximum stage occurring on the 7th. Growing corn in the bottoms at Clay Center and in localities below was damaged.

The majority of people here do not realize by what good fortune they escaped another disastrous flood. Seventy per cent of the amount of water that came down last year would have caused as great a flood, owing to the condition of the Kaw channel, which still retains many reminders of the flood of 1903.

The same general rain conditions that caused the Kansas River flood also extended southward through the Arkansas River Valley where similar experiences were encountered, though in a lesser degree. As a matter of fact, practically every stream in the eastern half of the State of Kansas was in flood, with the usual attendant conditions of damage and destruction. At Wichita, the Arkansas River reached a stage of 10.2 feet, 0.2 foot above the danger line, and but 0.8 foot below the great high-water stage of 1877. The river gate was washed away soon after the flood began, and three days before the maximum stage was reached the water was flowing through

some of the streets of the city. As the flood tide proceeded beyond the limits of the State of Kansas, the following high stages were reached: Webbers Falls, Ind. T., 25.1 feet, 2.1 feet above the danger line; Fort Smith, Ark., 25.5 feet, 3.5 feet above the danger line; and Little Rock, Ark., 25 feet, 2 feet above the danger line.

As far as could be learned no considerable damage was done by this flood after leaving the State of Kansas, although large areas of lowlands were overflowed.

The stages in the Ohio River and its tributaries were sufficient for all purposes of navigation except in the upper Tennessee, where low water necessitated a suspension of steamboat work for about two-thirds of the month.

Nothing of particular interest relative to the remaining rivers of the country has been observed.

The highest and lowest water, mean stage, and monthly range at 195 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Professor.*

CLIMATE AND CROP SERVICE.

By Mr. JAMES BERRY, Chief of Climate and Crop Service Division.

The following summaries relating to the general weather and crop conditions during July are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau; they are based upon voluntary reports from meteorological observers and crop correspondents, of whom there are about 3000 and 14,000, respectively:

Alabama.—Weather generally favorable for crop growth, except excessive and slightly damaging rains in scattered localities, and hailstorm in Coffee County destroyed crops over an area 4 by 14 miles. Cotton fruited well and was quite promising at the close of the month, though wet weather then caused too rapid growth; bolls began opening about the 20th; first bale marketed 26th. Corn and minor crops did well; some early corn matured during last decade. Large crop of late peaches were marketed.—*F. P. Chaffee.*

Arizona.—Temperatures averaged slightly below normal during July. Droughty conditions continued to prevail over most of the Territory during the first two decades, but during the third decade good rains fell over most of the Territory. During the drought crops, except in the lower Colorado Valley, were in very poor condition, and the condition of cattle was deplorable. The rains, however, revived the growth of vegetation and started grass on the ranges, and by the end of the month both cattle and crops had improved greatly.—*M. E. Blystone.*

Arkansas.—The temperature was below normal and the rainfall slightly in excess. Cotton made satisfactory growth and was fruiting nicely by the close of the month; some was laid by grassy. Early corn made a good crop; the late planted was promising. Harvest of wheat and oats was completed and thrashing begun; yields were satisfactory, quality medium. Some hay saved. Late potatoes were planted and came up to good stand; sweet potatoes promising. Apples fair crop; peaches good. Stock healthy.—*Edward B. Richards.*

California.—The abnormally cool weather during a greater part of July retarded the development of crops to some extent. Severe thunderstorms, accompanied by heavy rains, occurred in the mountains of southern California, and two lives were lost by lightning. Grain harvesting and thrashing were nearly completed, the crop below average in yield and quality. The hay crop was unusually heavy and of excellent quality. Deciduous fruits were not yielding the large crops expected. Grapes were giving promise of one of the largest yields for several years.—*Alexander G. McAdie.*

Colorado.—Month was favorable. Harvesting of winter wheat was practically finished; crop generally good, except in northeastern counties. Harvesting of spring grain was begun; good crops, but considerable rust in spring wheat. Corn and second crop of alfalfa made good growth. Ranges good, except in south-central counties. Cutting of native hay was begun. Potatoes and beets were excellent. Heavy crops of raspberries, cherries, and apricots marketed. Apples and peaches coming in. Melons late, but promising.—*F. H. Brundenbury.*

Florida.—Comparative cool, dry weather was favorable for work. Corn suffered during the early part of the month over a portion of the State for rain, and the early planting greatly deteriorated. Cotton

pushed forward, though the weed was smaller than usual, plants fruited very well and were generally free of insects. Citrus fruits over a portion of the belt suffered for rain early in the month. The pineapple crop was harvested, the yield was short.—*A. J. Mitchell.*

Georgia.—July was the fourth consecutive month with temperature below normal and the tenth with deficient rainfall. The distribution of rainfall over the district was very irregular, but no damaging drought occurred except in a few widely scattered localities. Crops generally were in excellent condition at the close of the month. Cotton made good growth, plants bloomed and fruited well and bolls began opening in the extreme south about the 25th. The commercial output of peaches was large.—*J. B. Marbury.*

Idaho.—A pronounced warm period occurred from the 20th to the 27th; marked cool periods were from the 13th to the 16th and on the 29th and 30th, the latter culminating in light frosts in elevated districts, doing little damage. Some injury was caused by drought, but crops in general made satisfactory progress. In most instances the range afforded ample subsistence for stock. Water for irrigation held out well.—*Edward L. Wells.*

Illinois.—Corn maintained a good condition throughout the month; at the end of the month the crop was mostly in tassel, and some fields were earing. Oats were practically all cut and considerable thrashing had been done during the third decade. Wheat harvesting was hindered somewhat by wet weather, but the crop was secured generally in good condition. Favorable weather for curing hay prevailed.—*Wm. G. Burns.*

Indiana.—The nights were abnormally cool. The precipitation was deficient during the last week. Corn was mostly laid by during the last decade and was looking well. Wheat harvest was finished about the 20th; yield very light, quality poor. Oats were harvested and clover hay made during the last half of the month; good crops were secured. Cutting timothy was under way at the end of the month. Apple and pear trees suffered from blight, and fruit prospects were materially lessened.—*W. T. Blythe.*

Iowa.—This was the coldest July since 1891, when the State average was 68.6°. Excessive rainfall from 2d to 15th developed rust in small grain, causing much damage to spring wheat. Latter half of month was drier and favorable for harvesting operations. The corn crop was laid by a week later than usual, but made fair progress during warmer period of the month. Conditions were favorable for potatoes, apples, and minor crops.—*John R. Sage.*

Kansas.—Wheat and oat harvests completed under difficulties, owing to wet weather. Wheat yield greater than expected, quality below average. Oats light. Corn improved rapidly, and was earing well in the central counties and tasseling in the northern; corn planted in the river valleys after the last flood grew rapidly. A good crop of tame hay was secured. Second crop of alfalfa generally stacked and was a good crop. Apples dropped badly in several counties. Peaches a good crop.—*T. B. Jennings.*

Kentucky.—The temperature and precipitation were slightly less than normal. Showers were irregularly distributed; some localities had too much rain, while others were suffering from drought at close of month. Wheat was harvested with yield and quality better than expected. Oats

and rye turned out well and hay gave a fair yield. Corn and tobacco made good growth, but in many places needed rain.—*H. B. Hersey.*

Louisiana.—Ideal growing weather prevailed during the early part of the month, but frequent showers toward the close of the month interfered with the cultivation of cotton, and weeds and grass spread rapidly; some complaints of shedding and rust were received. Cane was laid by in good condition, and the weather was all that could be desired for development and substantial growth. Rice harvest was under way at the close of the month. Corn was maturing slowly.—*I. M. Cline.*

Maryland and Delaware.—July was highly favorable for all growing crops, but frequent rains made harvest difficult. A large crop of hay was secured. Wheat yielded from poor to good; oats very good. Corn was very promising and tobacco mostly fine. Pasturage continued abundant. Early potatoes, plums, pears, and cherries were plentiful, and tomatoes and sugar corn promising. Fall plowing was general during the last half of the month.—*Oliver L. Fussig.*

Michigan.—The weather conditions were very favorable for haying and harvest work, but too dry for the best maturity of oats and the growth of corn, potatoes, and beans. Wheat, rye, barley, and hay were generally well secured. Wheat seeding germinated nicely and made fair growth. Sugar beets continued promising. Corn growth was slow and the crop continues backward. The general prospect of apples, plums, and grapes was good at the close of the month.—*C. F. Schneider.*

Minnesota.—Showery early in month, but fine in latter half. On northern lowlands wheat, oats, and barley poor and late; elsewhere these crops were excellent and were heading early in the month, with cutting of rye, barley, and oats begun about 15th, and early spring wheat ripening at end of month. Flax good, but somewhat backward. Corn backward, but improved rapidly with warmer weather late in month. Large clover and timothy crops secured in good condition.—*T. S. Oultram.*

Mississippi.—Cotton was generally very promising, although too much rain caused grassy fields and too rapid growth on lowlands; on uplands the crop developed finely and by the close of the month was fruiting well. Early corn matured nicely and late corn was promising, although somewhat damaged by too much moisture on lowlands. Sugar cane, sorghum, peas, potatoes, and melons did remarkably well. Pastures and meadows were in fine condition. Peaches made splendid yield.—*W. S. Belden.*

Missouri.—The first part of the month was rather wet and cool for best results; the last fifteen days gave sufficient sunshine, but nights continued cool. Corn, which was uneven, suffered from an excess of rain, especially in the western portion, and during the latter part of the month the crop was in need of moisture in the central portion. The bulk of wheat, oats, and hay was secured in good condition. The latter half of the month was very favorable for harvesting and haying.—*George Reeler.*

Montana.—Temperature conditions were generally favorable for growth, there being but one or two brief periods cool enough to have a retarding effect. Drought prevailed over several northern counties, drying up the range and damaging dry land crops. Cattle and sheep were in thriving condition, except in the drought stricken sections, where water became scarce the last two weeks. The month was exceptionally favorable for haying. Winter wheat harvest commenced the last week. All irrigated crops made satisfactory growth.—*R. F. Young.*

Nebraska.—The harvest commenced about two weeks later than usual, but, with exceptionally favorable weather conditions, was practically uninterrupted, and rye, barley, wheat, and oats were secured with little or no damage during the harvest. Thrashing began about the middle of July, and wheat and oats were found to be considerably damaged by rust and blight. Corn, although it tasseled about ten days late, made a good growth and was very promising at the end of the month.—*G. A. Loveland.*

Nevada.—The weather conditions throughout the month were favorable to growing crops and for harvesting hay and grain. Irrigation water was more plentiful than usual in all districts. Haying progressed without interruption from rains or winds, and from one to three crops of alfalfa were cut and stacked in excellent condition. Grain, potatoes, garden truck, and fruit did well. Range stock did well, the feed being generally fine and abundant in nearly all sections.—*J. H. Smith.*

New England.—The weather of the month was very pleasant, with sunshine above the average. With a few exceptions, the temperature was somewhat deficient in all sections. The rainfall was generally below the average and irregularly distributed. The weather was very favorable to crops, except too dry in parts of Maine and New Hampshire, and they were generally in good condition.—*J. W. Smith.*

New Jersey.—The month was especially noted for its frequent and heavy thunderstorms, which greatly delayed the harvesting of grain and hay; all truck crops at the close of the month were in fine growing condition; orchard fruit, except peaches, were fairly promising in places. Keifer and Bartlett pears promised an average yield.—*Edward W. McGann.*

New Mexico.—First half of the month was mostly dry and crop growth slow and backward, and in western half crop, stock, range, and water conditions were becoming serious. Beneficial showers during last half caused marked improvement. Additional planting was done and harvest of wheat, oats, and second crop of alfalfa was well under way. Field crops, gardens, and fruits improved greatly. Water holes and streams were renewed, range grasses revived, and cattle, horses, and sheep were gaining rapidly at close of month.—*Charles E. Linney.*

New York.—The month as a whole was favorable for agricultural interests, the week ending on the 18th being the most favorable of the season. Corn gained very rapidly, and buckwheat, potatoes, beans, oats, and barley were promising at the close of the month; some oats were cut; wheat and rye harvested, light yields. Hops, tobacco, and sugar beets made rapid progress, and some tobacco was topped. Haying nearly finished, large yield. Peaches and pears very light, but apples and grapes promising.—*R. G. Allen.*

North Carolina.—Temperatures were favorable for crop growth. The rainfall was heavy in south-central counties and insufficient in eastern section till the 27th. All crops laid by. Corn was silking and tasseling early part of month and attained excellent growth. Cotton was blooming and fruiting freely, stands were good. It was growing too fast in southern counties and was shedding slightly. Topping tobacco finished and curing became general, crop below average. Fruit prospects were fair, excepting apples.—*A. Wiesner.*

North Dakota.—Generally cool weather, with very unevenly distributed precipitation prevailed during the month. The cool weather was quite favorable for maturing wheat, oats, rye, and barley, but retarded the growth of corn and flax. Heavy rainfall in the lower Red River Valley did considerable damage to crops in that section, while a deficiency in the western portion of the State was not beneficial to crops there. Haying was in progress most of the month, and a large crop of excellent hay was secured.—*B. H. Bronson.*

Ohio.—Temperatures averaged below normal. Precipitation was above normal in the northern and middle and below in the southern sections. Wheat badly affected by rust and the yield was light. Fall plowing was begun the latter part of the month. Oats made rank growth and a large yield was expected. Corn very uneven; considerable damage by high winds and rain of 7th and 28th reported. Hay crop secured in good condition. Rye and barley made good progress. Apples poor; other fruits fair to good.—*J. Warren Smith.*

Oklahoma and Indian Territories.—Wheat damaged to some extent by wet weather, thrashing progressed with poor to fair yields. Early corn matured, late made rapid growth, and promised good yield, except local damage by hot winds. Cotton bloomed, balled, and fruited well. Kafir and broom corn, cane, millet, milo maize, and castor beans did well. Early potatoes gathered, yield good, late planted coming up. Haying progressed with good yield.—*C. M. Strong.*

Oregon.—Beneficial showers occurred in the eastern portion of the State, but west of the Cascades droughty conditions prevailed and vegetation made slow growth. Harvesting advanced rapidly and haying was completed. Thrashing began during the last decade and the yield of fall wheat was above the average. Early sown spring wheat and oats turned out better than expected. Pasturage generally short except in the mountains. Brush fruit was plentiful and apples promised well.—*Edward A. Beals.*

Pennsylvania.—Coolest July since 1895. Precipitation fairly well distributed. Owing to large acreage winter killed, wheat and rye crops will be less than average. Major portion of heavy yield of hay secured in good condition. Tobacco thrifty, considerable Havana seed ready to cut. Pasturage ample. Many corn fields in tassel. Potatoes and garden truck abundant. Early oats being harvested and late maturing rapidly. Pears and plums plentiful. Peaches scarce. Apples larger and better quality than anticipated. Buckwheat making rapid advance and plowing begun.—*T. F. Townsend.*

Porto Rico.—The dry weather that began in June continued until the last week in July, causing some loss of small crops and delaying planting in places. Cane suffered from the protracted dry spell, especially in the southern division, where there was some loss on land not irrigated. Many plots of early sown rice were lost, but that sown late looked well. Coffee began to mature and a few berries were picked. Mangoes, pineapples, alligator pears, bananas, and plantains were plentiful.—*E. C. Thompson.*

South Carolina.—Practically normal temperature and well distributed, generally copious precipitation caused a healthy, vigorous, sustained growth of all crops. Cotton fruited heavily and was unusually free from disease and injurious insects. Early corn came to maturity. Tobacco developed into a fine quality of leaf; curing operations made rapid progress. Water for flooding rice was scarce early in the month, but became available by its close. Crops were laid by in a well cultivated condition, unusually free from grass and weeds.—*J. W. Bauer.*

South Dakota.—The conditions were generally favorable for oats, rye, barley, spelt, potatoes, grass, millet, and garden stuff. Cutting of rye, barley, spelt, and early oats was far advanced, promising satisfactory yields. In the third decade, when harvest began, rust affected a previously promising spring wheat crop, and in the James River Valley seriously damaged it, except the macaroni. Corn, though healthy, was somewhat backward. The early was earing well by the 31st. Haying advanced favorably, with good returns. Early potatoes gave good yields. Flax did nicely.—*S. W. Glenn.*

Tennessee.—Frequent showers occurred over most of the State, but in scattered places the rainfall was insufficient. Generally, the conditions were very favorable to corn, cotton, tobacco, peas, millet, and garden truck. Wheat proved to be a good crop; oats and hay fine. Corn, at the close of the month, promised the largest crop for years, and cotton

SUMMARY OF TEMPERATURE AND PRECIPITATION BY SECTIONS, JULY, 1904.

In the following table are given, for the various sections of the Climate and Crop Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting greatest and least monthly precipitation, and other data, as indicated by the several headings.

The mean temperatures for each section, the highest and

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation. Of course the number of such records is smaller than the total number of stations.

Section.	Temperature—in degrees Fahrenheit.								Precipitation—in inches and hundredths.						
	Section average.	Departure from the normal.	Monthly extremes.						Section average.	Departure from the normal.	Greatest monthly.		Least monthly.		
			Station.	Highest.	Date.	Station.	Lowest.	Date.			Station.	Amount.	Station.	Amount.	
Alabama.....	79.6	-1.8	Newbern.....	103	2	Riverton.....	54	25	4.80	+0.11	Prattville.....	9.17	Delmar.....	1.80	
Arizona.....	81.0	-1.9	Mohawk Summit.....	118	11	Flagstaff.....	35	13	2.07	+0.48	Grand Canyon.....	6.00	2 stations.....	0.00	
Arkansas.....	77.9	-2.0	Jonesboro.....	104	30	Oregon.....	49	24	4.43	+0.31	Elon.....	9.56	Newport No. 1.....	1.06	
California.....	72.2	-2.4	Volcano Springs.....	117	11	Bodie.....	23	16	0.09	+0.02	Bodie.....	2.83	About three-fifths.....	0.00	
Colorado.....	64.4	-2.6	Lamar.....	102	15	Wagon-wheel Gap.....	23	13	2.09	+0.02	Sheridan Lake.....	7.38	Delta.....	0.08	
Florida.....	80.2	-1.2	Orange City.....	101	7	Stephensville.....	57	9	6.35	-1.12	Summer.....	15.04	Key West.....	1.40	
Georgia.....	79.0	-0.9	Fleming.....	104	20	Clayton.....	49	26	3.81	-1.89	Savannah.....	13.14	Butler.....	1.10	
Idaho.....	65.5	-0.9	Lewiston, Payette.....	105	21	Chesterfield.....	26	30	0.99	Roosevelt.....	3.28	Vernon.....	T.	
Illinois.....	73.2	-2.8	Peoria.....	104	17	Lanark.....	35	2	4.70	+0.97	Cambridge.....	10.39	Paris.....	1.57	
Indiana.....	73.0	-2.6	Fort Wayne.....	100	16	Fort Wayne.....	38	2	2.95	-0.51	Evansville.....	7.38	Madison.....	0.66	
Iowa.....	70.6	-3.6	Hector.....	100	17	Payette.....	38	2	4.41	+0.18	Thurman.....	11.97	Plover.....	1.28	
Kansas.....	75.6	-2.8	Marshalltown.....	100	17	Harrison.....	46	6	6.41	+2.66	Fall River.....	12.93	Dodge.....	1.71	
Kentucky.....	75.2	-2.0	Lakin.....	103	15	Loretto.....	46	3	3.40	-0.70	Mayfield.....	6.93	Falmouth.....	0.96	
Louisiana.....	79.9	-1.9	Bardstown.....	99	18	Minden.....	56	24	7.17	-1.83	Schriever.....	11.67	Shreveport.....	2.89	
Maryland and Delaware.....	73.5	-2.4	Cadiz.....	99	31	Minden.....	56	24	7.17	-1.83	Mount St. Marys, Md.....	8.32	Grantsville, Md.....	1.93	
Michigan.....	66.5	-1.8	Boettcher, Md.....	102	18, 31	Deer Park, Md.....	35	8	5.22	+1.40	Wasepi.....	8.27	Alpena.....	1.04	
Minnesota.....	66.0	-3.6	Gladwin.....	99	18	Humboldt.....	32	7, 8	2.97	-0.34	New London.....	9.15	Crookston.....	2.02	
Mississippi.....	78.6	-2.2	New Ulm.....	96	16	Wetmore.....	32	7	3.96	+0.44	Bay St. Louis.....	13.57	Okolona.....	2.25	
Missouri.....	74.2	-3.3	Wabasha.....	96	16	Pokegama Falls.....	34	28	6.72	+1.46	Mount Vernon.....	10.81	Willow Springs.....	1.63	
Montana.....	65.7	-0.1	Okolona.....	102	30	Batesville.....	53	25	4.65	+0.42	Lewistown.....	3.45	Wibaux.....	T.	
Nebraska.....	71.1	-3.3	Princeton.....	100	17	Montreal.....	47	24	1.10	-0.45	St. Libory.....	11.53	Beaver City.....	0.83	
Nevada.....	68.7	-1.8	Protem.....	100	14, 15	Grayling.....	25	30	10.11	-0.01	Falmouth.....	3.82	3 stations.....	0.00	
New England*.....	68.6	-1.1	Chinook.....	103	22	Alliance.....	36	6	4.23	-0.92	Derby Line, Vt.....	6.54	Jacksonville, Vt.....	0.78	
New Jersey.....	72.3	-1.7	Bartley.....	104	16	Potts.....	30	10, 11	4.23	-0.58	Plainfield.....	8.06	Charlotteburg.....	2.41	
New Mexico.....	72.4	-1.0	Eureka.....	110	22	Van Buren, Me.....	39	4	4.14	+0.52	Las Vegas.....	4.95	Fruitland.....	0.03	
New York.....	68.1	-1.8	Hartford, Conn.....	98	19	Grafton, Stratford, N. H.....	39	4	5.51	-0.04	De Ruyter.....	9.62	Chatham.....	1.53	
North Carolina.....	75.9	-1.8	North Grosvenor Dale, Conn.....	98	20	Charlotteburg.....	42	4, 14	28	-0.38	Horse Cove.....	3.85	Waynesville.....	2.17	
North Dakota.....	64.4	-3.6	Bridgeton.....	98	19	Winsor.....	31	8	4.13	+0.22	Walhalla.....	7.65	New England City.....	0.10	
Ohio.....	71.4	-2.6	Alamogordo.....	105	27	Paul Smiths.....	34	30	6	+0.21	Gratiot.....	9.57	Cincinnati.....	0.80	
Oklahoma and Indian Territories.....	79.6	-0.9	San Marcial.....	105	29	Lincolnton.....	40	26	3.86	+0.75	Pawhuska, Okla.....	10.25	Ravia, Okla.....	0.62	
Oregon.....	66.0	+0.4	Elmira.....	99	19	Linville.....	40	3	4.68	+0.38	Bay City.....	3.45	Arlington.....	T.	
Pennsylvania.....	70.6	-1.3	Mount Airy.....	103	20	Minto.....	34	28	5.30	Doylestown.....	9.19	Lansdale.....	1.92	
Porto Rico.....	78.5	-0.5	Medora.....	102	15	Hillhouse.....	41	32	5.96	+0.71	Mayaguez.....	16.07	Guanica Central.....	0.96	
South Carolina.....	79.4	-0.5	Findlay.....	99	17	Akron.....	41	4, 5	2.67	-0.16	Cheraw.....	14.38	Clemson College.....	1.44	
South Dakota.....	68.7	-3.7	Frederick, Okla.....	104	12	Pawhuska, Okla.....	51	6	3.78	-0.41	Marion.....	6.16	Fort Meade.....	0.40	
Tennessee.....	75.4	-2.0	Grants Pass.....	107	20	Bend.....	24	29	2.70	-0.16	Florence.....	6.74	Sewanee.....	1.21	
Texas.....	81.2	-1.5	Blalock, Pendleton.....	107	21	Smethport.....	34	3	0.68	+0.10	Huntsville.....	7.80	2 stations.....	0.00	
Utah.....	69.7	-2.6	Lock Haven.....	99	19	Adjuntas.....	56	12	4.83	+0.28	Pinto.....	3.25	3 stations.....	T.	
Virginia.....	73.5	-2.8	Carey.....	98	15	Burke's Garden.....	38	3	0.97	+0.13	Columbia.....	9.01	McDowell.....	1.51	
Washington.....	66.2	+0.2	Sumter.....	105	7	Bellingham.....	35	24	3.28	-1.48	Clearwater.....	4.33	Lakeside.....	T.	
West Virginia.....	71.5	-1.3	Gaffney.....	105	19	Cusick.....	35	19	3.52	-0.72	Upper Tract.....	6.00	Leonard.....	1.04	
Wisconsin.....	67.1	-3.4	Aiken, Seivern.....	105	20	Terra Alta.....	42	3	1.27	-0.05	Berlin.....	8.63	City Point.....	0.94	
Wyoming.....	62.9	-2.9	Armour, Chamberlain.....	102	29	Freedom, Wells.....	25	30			Grand Canyon, Y. N. Park.....	4.30	Border.....	0.12	
			Leslie.....	102	15										
			Maryville.....	100	19										
			Bowie.....	109	12										
			Green River.....	109	25										
			Newport News.....	100	6										
			Zindel.....	108	20										
			Martinsburg.....	97	19										
			Darlington.....	103	17										
			Fort Laramie.....	99	15										

* Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

and tobacco were doing well. The apple crop was generally good; peaches fair to good.—*Roscoe Nunn.*

Texas.—The rainfall conditions were favorable during the first half of the month, but after the 15th the western two-thirds of the State began to feel the need of rain and all crops in the north-central counties suffered from drought. Temperature conditions were generally favorable. Cotton did exceptionally well during the first half of the month, but during the latter half growth was generally slower in the western two-thirds of the State. The plants fruited nicely. The fields were kept well worked out and cultivation was completed the latter part of the month. At the close of the month a few bolls were opening in all sections and a number of bales had been picked in the more southerly counties. Boll weevils caused considerable damage in a number of southwestern and central counties. Boll worms were generally present in the central division, but damage by this pest was confined to limited areas. Late corn generally suffered from drought and will make a short crop. Rice did well and the early sown was heading nicely the latter part of the

month. Sugar cane made good growth. The hay crop was unusually heavy and most of it was saved in fine condition. Ranges and pastures continued to furnish plenty of feed for stock.—*L. H. Murdoch.*

Utah.—Temperature averaged below normal and precipitation above. Local damage by wind and hail reported. Crops matured rapidly. Lucerne was cut twice with good yields. Fall grain was cut and spring grain ripening. Threshing was general with splendid returns, especially on arid farms. Beets were very fine. Corn was earing well. Potatoes were setting satisfactorily. Apricots, peaches, and early apples of superior quality were abundant. Berry season declining. Pasturage plentiful and stock thriving. Water was generally sufficient.—*R. J. Hyatt.*

Virginia.—The general weather conditions were favorable for crop progress. Field work consisted mostly of harvesting and thrashing winter wheat and oats, haymaking, working tobacco, and beginning fall plowing. Corn and tobacco were in a very promising condition, the former indicating a large yield and the latter very good returns for the

acreage set out. Pastures were excellent all the month. The prospect for fruit, especially apples, was poor.—*Edward A. Evans.*

Washington.—The rain of the month was poorly distributed. It was copious in the eastern tier of counties during the first three to five days and during the period from the 14th to the 18th, having a beneficial influence on spring wheat and vegetables. A drought prevailed in the western division until the 14th, when general rains began, lasting four days. In the west, pastures were dried up and the potato crop shortened. The oat crop was also light, owing to drought.—*G. N. Salisbury.*

West Virginia.—The weather during July was favorable for crops, but harvesting was somewhat retarded by showers. Corn made rapid growth. Wheat and rye were harvested with poor yields. Haying was in progress during the last week, but the crop was smaller than expected. Oats were promising and some were being cut. Millet, cowpeas, gardens, pastures, and buckwheat were doing well. The prospects were that apples and

peaches would make about a half crop and that grapes would be abundant.—*E. C. Vose.*

Wisconsin.—Although the month was cool, all crops, except corn, made substantial advancement. Winter wheat and rye reached maturity about the middle of the month, and oats, barley, spring wheat, and rye were ready for cutting at the close. Corn made slow growth on account of cool nights. The hay crop was heavy and generally secured in good condition. Tobacco was generally backward. Apples and cranberries were in promising condition at the end of the month.—*W. M. Wilson.*

Wyoming.—Cool, with frosts on the 7th and damaging frosts on the 30th over the western sections. Good rains were quite general during the first half of the month. Range grass was mostly cured, with an excellent stand. Grain and gardens not injured by frosts made good growth. A good first crop of alfalfa was secured. Native hay harvest was in progress; good crop. Good flow in streams, and irrigation water sufficient for needs. Stock in excellent condition.—*W. S. Palmer.*

SPECIAL ARTICLES.

RECENT PAPERS BEARING ON METEOROLOGY.

Mr. H. H. KIMBALL, Librarian and Climatologist.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

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